



We know where we want to go, and how we're going to get there. Now we're moving ahead.

1

2

6

10

12

18

22

24

25

UNIVERSITY GOVERNANCE



## TWO YEARS AGO WE DECIDED TO CREATE A NEW ROAD MAP FOR THE UNIVERSITY

that Carleton would meet the challenges of the 21st century.

In charting this course, we asked for directions along the way – we formed a task force to consult with the University community; we solicited ideas and feedback from our alumni; and we asked for the opinions of Carleton University's many private and public sector partners.

As illustrated in "New Directions," my report last year, we've now set a course for the future. It is a future that incorporates and

### PRESIDENT'S MESSAGE

celebrates Carleton's traditional focus on public affairs and management, and showcases those departments in a new faculty that supports a strong interdisciplinary approach. It is a future that will see continued well-planned growth in engineering and science, capitalizing on our current strengths and industrial partnerships. It is a future that reconfirms our commitment to liberal arts and to our B.A. programs. Above all, it is a future committed to our students and our community – in our teaching, learning, and research.

Changing directions means making difficult choices. When we decided to focus our energies and resources on new strategic goals, we understood that we may not be able to support all of our programs. After a process of extensive review, we closed admissions to several small language programs.

We also needed to ensure that our new strategic directions would be built on a solid foundation. Financially, this meant removing \$5.4 million from our operating budget to balance our books and begin paying back an accumulated deficit. It also means establishing some stability on the labour front. This year we settled multiyear contracts with two of our largest unions – administrative/technical staff and faculty.

By making these choices and strengthening our foundation, we are now able to reinvest in the future. This year we are introducing a renewed B.A. program, with innovations such as small first-year seminars and "breadth" requirements to ensure that

– one that would lay out our future directions to ensure

our graduates have what employers say they value most about the B.A. – a broad span of learning and a demonstrated ability in a number of areas. We're also introducing several exciting new programs such as communications engineering, engineering physics, criminology and criminal justice, and art and culture. And we have extended our co-op options to all areas of engineering and science.

In the areas of teaching and learning, we are continuing to integrate advanced technology into the classrooms, labs, and curriculum of our programs. That involves such things as teleconferencing to link students from across the continent in a course on the Free Trade Agreement, or partnering with Nortel to establish a state-of-the-art research and teaching computer lab for communications engineering.

Students have responded to these changes. Last year, over one-third of our entering class were scholarship recipients. This September, the average high school grades of Carleton's newly admitted students are continuing to rise to near 80 percent. And while we have been raising our admissions standards, we've established a new program to provide a structured and supportive environment for a limited number of students who we believe can succeed in spite of having lower marks in high school.

At Carleton, our research strengths are a clear reflection of the future we have chosen. The issues facing contemporary society, advanced applications for engineering and science in areas such as telecommunications and life sciences, and relevant, focused research in traditional disciplines like psychology, history, and geography are all being actively pursued. Carleton is investing research funds in these areas, but we are also attracting a gratifying share of government contracts and partnerships with the private sector – yet another measure of support for the choices we have made.

There is still a lot of work to be done, but the period of intense change is behind us. We know where we want to go, and how we're going to get there. The course has been charted, now it's time to move ahead.

Richard Van Loon

PRESIDENT AND VICE-CHANCELLOR

BRETT DAWSON

Professor/Law department | Carleton's new B.A. students will discover the excitement of learning in small classes

## MOVING AHEAD WITH INNOVATIVE PROGRAMS

Our graduates have

most about the B.A.

# what employers value

## CARLETON UNIVERSITY HAS A LONG TRADITION OF PIONEERING

the University moves ahead with a revitalized liberal arts program, the first communications engineering program in North America, new programs in architecture, applied physics, engineering physics, art and culture and more. Here are some of the highlights.

**A NEW B.A. PROGRAM THAT MEETS STUDENTS' NEEDS**  
Students who enter Carleton's Bachelor of Arts program this fall will discover the excitement of learning in small classes. All first-year B.A. students will be required to enrol in a seminar course where an experienced faculty member will serve as both teacher and mentor to a group of no more than 30 students.

The seminars are part of a series of reforms aimed at revitalizing the liberal arts experience. Class assignments and frequent, early feedback will help students develop the research, writing, analytical and study skills they'll need to succeed throughout their university career and beyond.



*All first-year B.A. students will be required to enrol in a small seminar course, taught by an experienced faculty member.*

Other improvements to the program will help students see the relationship between and among disciplines. To complete their studies, students will be required to choose optional courses from at least three of four course groupings — literary and cultural studies; social sciences, natural sciences and technology; history; and ethics and moral values.

While standardizing requirements for all arts graduates, the new B.A. offers added opportunities for students to tailor their studies to match their academic and career goals. These options will be reflected on their diploma, providing employers with a clear indication of the knowledge and skills the students have developed through their studies.



4

Carleton's Bachelor of Architectural Studies prepares students to work in a variety of design fields, including high technology and multimedia.

#### COMMUNICATIONS ENGINEERING – A FIRST FOR CARLETON, A FIRST FOR NORTH AMERICA

Carleton made history this fall when it became the first university in North America to respond to new opportunities in the communications industry by offering an undergraduate degree program in communications engineering. Graduates of the program will go on to become the architects of the next generation of integrated voice, data and image telecommunication systems. They'll also find careers in the design and construction of 'smart' buildings, automated highways and rapid transit systems, air traffic control systems, the aerospace industry, and distributed banking.

"Communications engineering represents a new and exciting career choice," says engineering professor Malcolm Bibby. "The telecommunications industry is expanding at the rate of 15 to 20 percent a year. Graduates of our program will be well prepared to engineer the integrated, convergent information systems of the 21st century."

#### REDESIGNING ARCHITECTURE

Carleton's former five-year Bachelor of Architecture program has been transformed into a new four-year Bachelor of Architectural Studies program followed by a two-year professional program leading to the Master of Architecture designation.

The new undergraduate program is organized around building design studios and includes courses in computer modeling, multimedia, drawing, art history, architectural history, building

"CATA HAS FOUND CARLETON UNIVERSITY TO BE THE MOST FORWARD-THINKING UNIVERSITY AND THE MOST CAPABLE OF MATCHING INDUSTRY'S DEMANDS AND NEEDS WITH THEIR PROGRAMS."

John Reid  
President of the Canadian Advanced Technology Alliance (CATA)

technology, construction, structures and lighting. Graduates who choose not to pursue professional studies in architecture can explore careers that require new applications of architectural and design training.

The new M.Arch. degree, meanwhile, focuses on advanced theoretical issues. "The M.Arch. signals a clear break between introductory and advanced architectural design," says Director Ben Gianni.

#### ENGINEERING PHYSICS – APPLYING FUNDAMENTAL SCIENCE TO NEW TECHNOLOGY

Carleton's new program in engineering physics, also being introduced this fall, focuses on solving technological problems through the application of fundamental science.

Students in the program will study material sciences, applied physics and electronics in a curriculum developed after extensive consultation with industry. Hands-on learning begins in small, first-year classes and progresses to co-op placements for upper-year students.

Says Physics Chair John Armitage, "co-op terms will allow students to take the skills and knowledge they've developed in the classroom and apply them in some of the world's leading high technology companies. Students return to the University with a better understanding of what skills and courses they need to succeed in industry."

## APPLIED PHYSICS - BUILDING ON STRENGTHS FOCUSING ON EMPLOYMENT

A new program in applied physics, which replaces earlier programs offered by the University's physics department, builds on Carleton's established strengths in the applied sciences. The objective - greater employment opportunities for our graduates.

A core program in physics is complemented by other science courses including chemistry and computer science. "Classroom instruction and co-op work experience will provide our students with the knowledge and skills to perform on the cutting edge of high technology research and development," say Physics Chair John Armitage.

The program leads to employment opportunities in a wide range of advanced technology fields such as fibre optics, medical physics or computer chip design and manufacturing.

A program advisory committee, made up of representatives from the local high tech community, ensures that graduates have the education and skills that are relevant to industry.



## OTHER ACADEMIC NEWS

- This fall, Carleton introduced a new B.A. program in art and culture. The new degree will equip students with the knowledge and skills to "live and thrive in today's audio-visual culture," says Director Bryan Gillingham, "whether they're managing it, creating it or just enjoying it."

- An agreement signed last October between Carleton University and the Université du Québec à Hull provides for undergraduate and graduate student exchanges between the two institutions. Under the agreement, students in good standing will be able to study in either of Canada's official languages.

Carleton has launched an extensive program of faculty renewal, and has made over 25 new tenure-track appointments in the past year. Shown (left to right) are: Dwight Deugo, computer science; Denis Saint Martin, public administration; Ralph Mason, electronics; Janice Neil, journalism and communication; Neil Tate, electronics; Rebecca Kukla, philosophy; Gregory MacLennan, humanities; and Kabir Kabir, journalism and communication.



Farhana Sheikh

Cadabra Corporation

works with Carleton engineering student Chris O'Brien, putting his knowledge to work on a co-op placement at Cadabra, a local software firm.

CARLETON STUDENTS – MOVING TO THE HEAD OF THE CLASS

6

hands-on work experience

Our students have more

than ever before

## OUR STUDENTS. THEY'RE AT THE CENTRE OF EVERYTHING WE DO, AND THEIR

In dozens of national competitions, Carleton students keep moving to the head of the class. Many are in a class all their own. Take a look at where they are and at some of the programs that helped them get there.

### CO-OP – A HEADSTART ON EMPLOYMENT OPPORTUNITIES

Co-ops, internships, practicums – Carleton students have never had more opportunities to gain practical, hands-on work experience than they have today. Carleton University now offers credit co-op options in all of our science and engineering programs, and has work experience and internship options in many other programs.

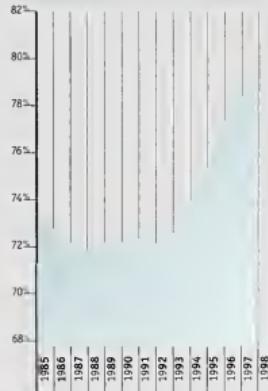
Students in co-op programs combine their academic studies with three or four work placements of either four, eight, 12, or 16 months.

accomplishments provide a measure of our success.

"Most companies and most of our students prefer longer work terms," says Vice-President (Academic) Stuart Adam. "At Carleton, work terms can last as long as a year, which allows our students to stay with a project from start to finish. They're able to develop a strong relationship with employers – significantly enhancing their prospects of securing a job after graduation."

A new office was set up last December to oversee the engineering and science co-op programs. Dean of Science Peter Watson expects the office to be handling over 600 placements a year by 2001.

Work experience, internships, and practicums are also offered in commerce, public administration, industrial design, political science, anthropology, art history, Canadian studies, criminology, environmental studies, law, psychology, sociology, and social work.





CARLETON STUDENTS - MOVING TO THE HEAD OF THE CLASS



Over a third of this year's entering class are award recipients

#### SOME RECENT STUDENT ACCOMPLISHMENTS

- For the second year in a row, two Carleton candidates have won prestigious NRC Women in Science and Engineering awards, valued at over \$30,000 over three years. The national award combines scholarships with summer jobs with the National Research Council. This year's winners are Cheryl Eisler from aerospace engineering and Elzbieta Beres from electrical engineering.
- It doesn't get any better than this. Daniel Smith graduated in June from a combined program in computer science and mathematics. Smith maintained a perfect 12.0 grade point average for all four years of his degree - that's 20 straight A+ grades. Academic excellence runs in the family. Smith's older sister Katherine, a Carleton graduate now working as a software engineer at Nortel, achieved a GPA of 11.975 when she graduated two years ago from a program in mathematics.
- For the second time in four years a Carleton commerce graduate has won the Ontario and Canada gold medal in the Canada-wide Uniform Final Chartered Accountant Examination (UFE). Late last year, 1995 B.Com. graduate Dan Buchler topped a field of more than 650 candidates to win the honours. "I think it is really good for Carleton," said Buchler, who, at the time, was articling at Ernst & Young as an auditor in the high tech area. "It shows that the School of Business has an excellent accounting program." Director Vinod Kumar agrees. "Considering we provide less than one percent of all UFE writers, two gold medals in four years is quite an achievement."
- Last fall, third-year international business student Chris Kutarna won the \$5,000 Magna for Canada scholarship for his 2,500-word essay outlining what he would do if he were prime minister. The annual cross-Canada writing competition is sponsored by Magna International.
- Andreas Tomaszewski, a doctoral student in sociology, beat a field of 100 competitors to take top honours in the 1997 international criminology competition sponsored by the American Society of Criminology. His winning master's thesis was completed at Carleton in 1996. It detailed approaches to criminal justice that can be applied in the new territory of Nunavut.

- Centretown News, a community newspaper produced by Carleton journalism students, was named best overall university or college newspaper in 1996-1997 by the Ontario Community Newspapers' Association.
- Industrial design graduates Michal Jacob and Tom Stovicek captured first prize in an international student health care design competition last fall. The two, who were both working at Nortel at the time, won the award for designing a discreet, practical, medication carrying case for children with diabetes.
- Bachelor of Music alumna Gabrielle Aarons had a banner year before graduating last spring. While at Carleton, Aarons won the Ottawa Choral Society's trophy for vocal performance at the Kiwanis Festival, as well as the Ottawa regional senior competition and the provincial student vocal competition sponsored by the Ontario Registered Music Teachers Association. Today, she's studying classical voice in Montreal. Says music professor Alan Gillmor, "Aarons is an outstanding performer who has an honest shot at the big leagues in popular or classical music."

- Four products designed by six Carleton industrial design graduates are being featured on a series of postage stamps commemorating the 50th anniversary of the Association of Canadian Industrial Designers. The stamps, introduced last July by Canada Post Corporation, show works by Henry Eng, Todd Wood, Diane Croteau, Richard Brault, Jonathan Vinden, and Ross Slade.
- Graduate students in the School of Journalism and Communication launched Canada's first on-line parliamentary news service called *capitalnews online*. As part of their course work, students produced original stories from Parliament Hill which were made available on the Internet.



Lara Rom, 21, left, Anton Tikhov and Lianna Sherman are three of this year's \$20,000 Canadian Scholarship winners.



MOYRA McDILL

Professor of Engineering

Our engineering students and faculty have access to the best hardware and software around

USING TECHNOLOGY TO TEACH AND LEARN

# advanced technology

We are continuing to integrate

throughout the University

## AS ONE OF THE FIRST UNIVERSITIES TO OFFER INSTRUCTIONAL TELEVISION COURSES

Carleton helped to pioneer distance education in this country. Today, advances in information technology are creating new opportunities for us to share our knowledge with the world and bring the world into our classrooms.

**TECHNOLOGY CREATES A CLASSROOM WITHOUT WALLS**  
Last year, Dean of Science Peter Watson offered a course in physics to university students in Africa through a project sponsored by the World Bank. Videos of the course were transmitted via satellite to Zimbabwe. From there, the courses were distributed via satellite to universities throughout Africa. Every other week, Watson supplemented the original broadcasts with a two-hour live telecast. He fielded questions from his African students via fax, email, and telephone.

"The World Bank is now seeking academic programming for a more permanent 'virtual' university," says Carleton's Director of Instructional Television Robin Allardyne.

Closer to home, a course by Canadian studies professor Heather Menzies is being offered to students at the University of Windsor and the University of Waterloo. The course, "Canada in the Global Village," explores the social and cultural context of technological development in Canada through a documentary approach that includes archival visuals and interviews with other academics.



The course won an award of merit from the Association for Media and Technology in Education. Production of the 12 one-hour videotapes was made possible by a grant from Heritage Canada.

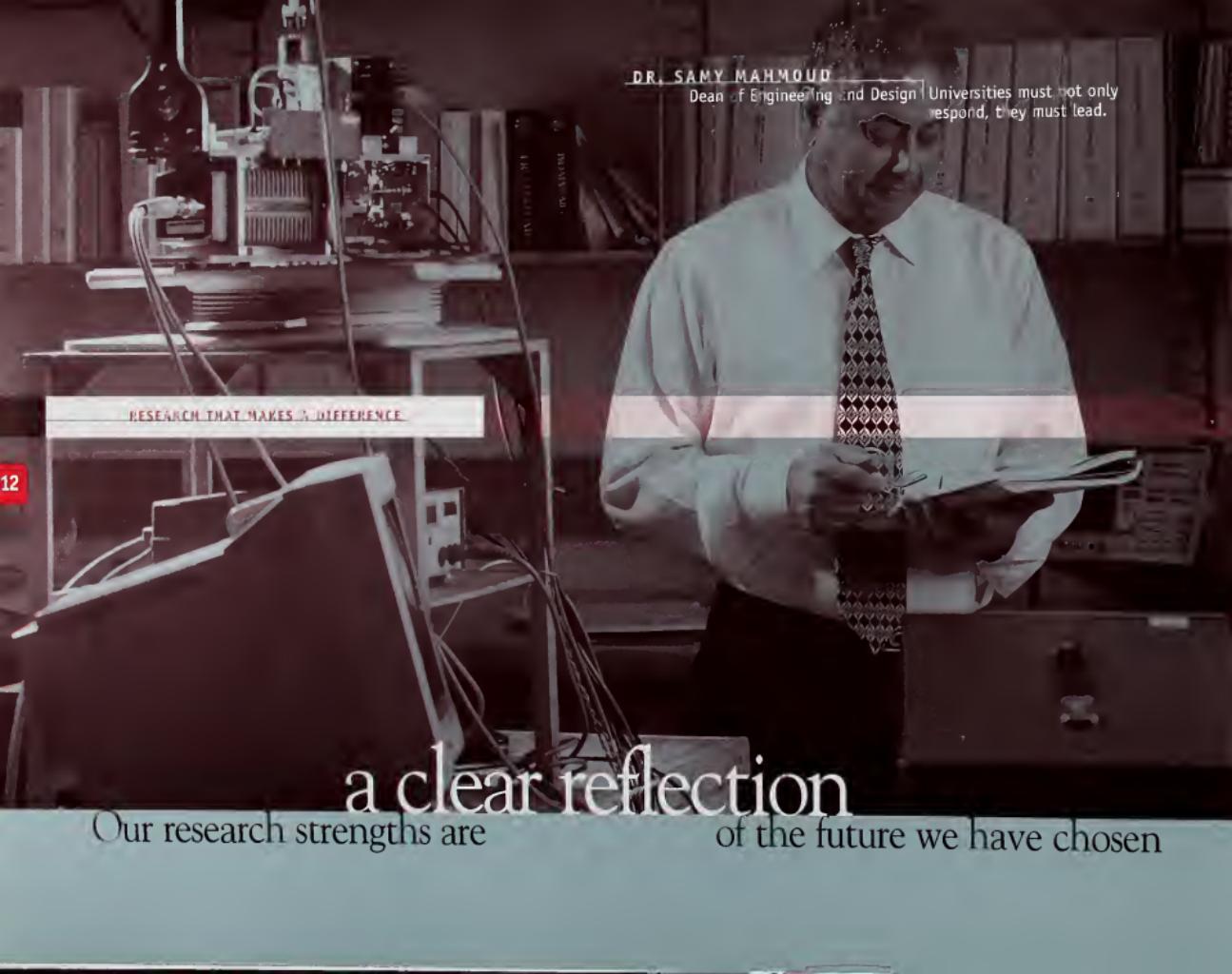
On another front, students in Carleton's Norman Paterson School of International Affairs were linked up with students at Texas A&M University and the Instituto Tecnologico Autonomo de Mexico in Mexico City in a course that examined the North American Free Trade Agreement (NAFTA).

Three-way video conferencing connected the graduate students for eight classes. Guest speakers included former U.S. President George Bush and Serra Punche, who served as Mexico's Secretary of Commerce and Industry during the NAFTA talks.

## STAYING AHEAD OF NEW TECHNOLOGY

In July 1997, a team from Carleton participated in teaching, learning, and technology roundtables sponsored by the American Association of Higher Education (AAHE). The group brought the idea back to Carleton, and now faculty members, teaching assistants, administrators, students, and service providers are meeting to share ideas and information about how best to use technology both in and out of the classroom.

*Carleton helped to pioneer distance education in this country.*

A composite image. On the left, a 3D printer is shown printing a white object. In the center, a man in a light blue shirt and patterned tie stands in a library, holding a book. On the right, a model of a sailboat with a single mast and sail is displayed. The background is a dark wood-paneled library.

DR. SAMY MAHMOUD

Dean of Engineering and Design | Universities must not only respond, they must lead.

RESEARCH THAT MAKES A DIFFERENCE

a clear reflection  
Our research strengths are of the future we have chosen

## BUILDING ON OUR STRENGTHS, FORGING STRONG PARTNERSHIPS AND

moving ahead with innovative plans for the future – that's always been the way we do things. Nowhere is this tradition more clearly demonstrated than in Carleton's Faculty of Engineering and Design.

Home of Canada's first degree program in aerospace engineering, the Faculty is continuing to respond to the rapidly changing world of high technology with new programs this fall in communications engineering (another Canadian first), engineering physics, and software engineering starting next year.

Our internationally recognized faculty have developed close connections with the companies in Canada's fastest-growing high tech region, which enriches our research, co-op and learning opportunities. Facilities such as the chip fabrication lab and the new Nortel Advanced Communication Software Engineering Research and Training Lab give our students and faculty access to the best hardware and software around.

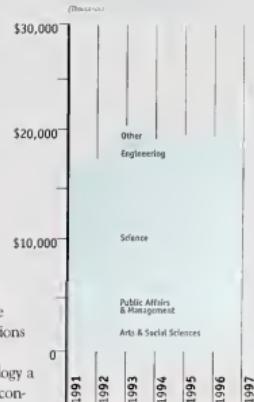
Dr. Samy Mahmoud, the new Dean of Engineering and Design, is a prime example of this drive to expand and explore, while forming close research partnerships. While on sabbatical at Nortel in 1997-98 Dr. Mahmoud led the proposal to establish a National Capital Institute of Technology (NCIT), with partners

from the high tech community, the Regional Municipality of Ottawa-Carleton, the University of Ottawa, and major government labs such as the National Research Council and the Communications Research Centre.

"We've made the study of advanced technology a priority at Carleton" says Mahmoud, "and that is consistent with our role in this region and in Canada. Our faculty are leaders in both federal and provincial Networks of Excellence, and our graduates are becoming leaders in the high tech field, both as senior managers and as entrepreneurs. They are an integral part of the new information economy, and this is one of the signs of a great university."

Mahmoud's own research on wireless communication has been recognized nationally and internationally, and even with his new responsibilities as Dean, his research and work with graduate students remains a priority and a source of ideas, energy, and enthusiasm.

"People expect us to continuously evolve and change, and that's what we'll do," says Mahmoud. "Universities must not only respond, they must lead."





#### RESEARCH THAT MAKES A DIFFERENCE



#### THE HUMAN FACTOR — EXPLORING THE COMPUTER-USER INTERFACE

Many people imagine high tech research having to do with software and hardware, bits and bytes, chips and wires. But they are leaving out the most crucial component — people. Psychology professors Dick Dillon and Jo Wood are pioneers in the relatively new field of Human-Computer Interaction (HCI), which is rapidly gaining importance to high tech researchers, designers, and manufacturers. They are looking at how to design computer systems and technical devices to better meet the needs of the user.

"This area is a great example of how social scientists have an important contribution to make as part of the planning and design team for new technology products," says Dillon. "It is routine for a psychologist to run usability tests or user needs assessments, but those are not typically engineering skills."

"Addressing HCI concerns in design means you end up with a better product," Wood adds. "Products that are easy for the user to understand and work with mean better productivity. That's a vital feature in a highly competitive marketplace, and it is simply better for the users. Everyone wins."

Dr. Dick Dillon and Dr. Jo Woods are helping hardware and software designers to make their products "user-friendly."

#### BACK TO BASICS — NEW APPLICATIONS FOR COMMON POLYMERS

Polymers have many unique and interesting properties, and chemistry professor Dr. Wayne Wang has an idea for all of them.

Wang is an intriguing blend of a pure researcher, probing into the fundamental nature of organic material, and a savvy applied chemist, always thinking of new applications for his discoveries.

Polymers are long-chain molecules. Some, like cotton, occur naturally but Wang is working with synthetic polymers, specially manufactured to have specific properties. Because some polymers change colour when exposed to external stimuli such as light, heat or magnetic fields, this makes them perfect for use in information displays that have to be cheap, light, and flexible, such as telephone cards, an area of Wang's research sponsored by Nortel. He is also exploring the possibility of using polymers — cheap, abundant, and easy to produce — as an alternative to inorganic materials in computer chips.

"By doing basic research into the nature and properties of organic materials, we gain understanding into how to use these materials to improve our quality of life," says Wang.

## ENGINEERING PHYSICS – USING SCIENCE TO EXPAND THE POSSIBILITIES

As our understanding and use of technology grows, the distinctions between different areas blur and become irrelevant. Dr Tom Smy, a professor of electronics, is a case in point. He conducts research in the border between engineering and physics, where a thorough understanding of how physical processes work helps him improve how computer chips and telecommunications devices are made.

"Our goal is optimization," Smy explains. "Right now, metal interconnects are the bottleneck to increasing the speed of a chip's operation. If we can optimize their performance, we increase the speed at which the chip operates."

Smy helped design the industry-standard software used to analyze metal interconnects – SIMBAD. He is also working with Nortel (with funding from NSERC and MicroNet) to solve cooling problems in cell phones and other communications devices using on-chip inductors for fully integrated radios.

"I came to Carleton partly because of the 'fab' (chip fabrication) lab," says Smy. "It allows me to simulate the physics of a process on the computer, and then actually try out techniques to build better chips."

## LEARNING HOW TECHNOLOGY AFFECTS OUR COMMUNITIES

Many Carleton professors are contributing to the growth of this region's high tech sector, but one of them is studying the effects of that growth as well. Dr. Vincent Mosco, a professor in the School of Journalism and Communication, is conducting a SSHRC-funded study of four high tech districts around the world – New York City, Kuala Lumpur, Bologna, and Ottawa – and the impact of these industries on the political, cultural, and social development of the regions.

"We're looking at the changes each region is putting into place to attract or respond to these rapidly growing industries," says Mosco, "and the impact of these decisions on how the society develops."

Mosco's research arose from a lecture he gave exploding some of the current myths around technology, communications, and the future.

"Some people think that with the 'wired' world we live in, the concept of place isn't important anymore. That simply isn't true. People in different countries and cultures make different decisions and respond in different ways. It will be interesting to follow how the National Capital Region integrates high tech growth into its development."



Dr. Vincent Mosco of the School of Journalism and Communication is studying the effects of high technology development on different international communities.



#### RESEARCH THAT MAKES A DIFFERENCE



16  
Dr. Ken Storey holds one of the turtles used in his research on the process of hibernation, which has important implications for the treatment of heart disease, diabetes, and organ transplants.

#### UNVEILING THE SECRETS OF HIBERNATION

Why can some animals survive being frozen solid or deprived of oxygen for long periods?

Biochemistry professor Dr. Ken Storey is determined to unlock the secret of how some frogs, turtles, and insects change their body chemistry, enabling them to freeze and thaw, or experience lethal glucose levels without any tissue damage. His research is of great interest to the medical community, with important implications for heart disease, diabetes, and organ transplants.

"We know that these animals 'turn on' novel genes to make their cells respond in a certain way to severe conditions," explains Storey. "We are studying the enzymes that are produced in cells and how they resculpt the tissues, turning on new processes, and allowing organs to remain functional. Once we understand how this works at the molecular level, we can attempt to replicate the process with more complicated organisms."

While he collaborates with major research institutions around the world, Carleton is actually the perfect place for his research. Storey and his students catch the frogs and insects they need right on campus.

#### TEACHING AWARDS 1998-99

Robert Burk, Chemistry

Michael Fox, Geography

Angelo Mingarelli, Mathematics and Statistics

Paul Van Geel, Civil and Environmental Engineering

#### PROFESSIONAL ACHIEVEMENT AWARDS

##### Lecturer/Instructor 1997-98

Brigitte Vincent-Smith, French

Lorna Unger, Business

##### Librarian 1998-99

Ingrid Draayer, Library

Frances Montgomery, Library

Ene Tikovt, Library

#### RESEARCH ACHIEVEMENT AWARDS

Norman Hillmer, History

Fiona Mackenzie, Geography

Daiva Stasulis, Sociology and Anthropology

Tom Smy, Electrical Engineering

Abd El Halim, Civil and Environmental Engineering

Maeve McMahon, Law

Stanley Winer, Public Administration

Kenneth Storey, Biology

Frank Dehne, Computer Science

Patrick Weatherhead, Biology



*History professor  
Duncan McDowall  
was asked by the Bank  
of Canada to determine  
whether or not Nazi  
gold was laundered  
in Canada.*

#### **MAKING HISTORY LIVE – UNDERSTANDING THE PRESENT BY INVESTIGATING THE PAST**

History professor Duncan McDowall knows that history is relevant to people's daily lives, and he has the research to prove it.

McDowall was asked by the Bank of Canada to conduct an independent investigation on whether or not Canadian gold reserves were used to launder Nazi gold during the Second World War. His intensive research not only conclusively exonerated Canada from any wrongdoing, but also opened many important historical documents to other researchers as well.

"This story really touched a nerve worldwide," says McDowall. "It provoked Western nations to consider the morality of their actions during the War, and has brought the issue of looted property to the fore. It was very gratifying to play a part in an issue that demonstrated so clearly the linkage between academic skills and public need."

McDowall is an award-winning author of several corporate histories, and has just released a book on the history of tourism in Bermuda.

#### **NEW NEUTRINO DETECTOR HAS STRONG CARLETON CONNECTIONS**

On April 29, 1998, Canada's most ambitious science project – the Sudbury Neutrino Observatory (SNO) – was launched. Amid the international media exposure a large group of Carleton

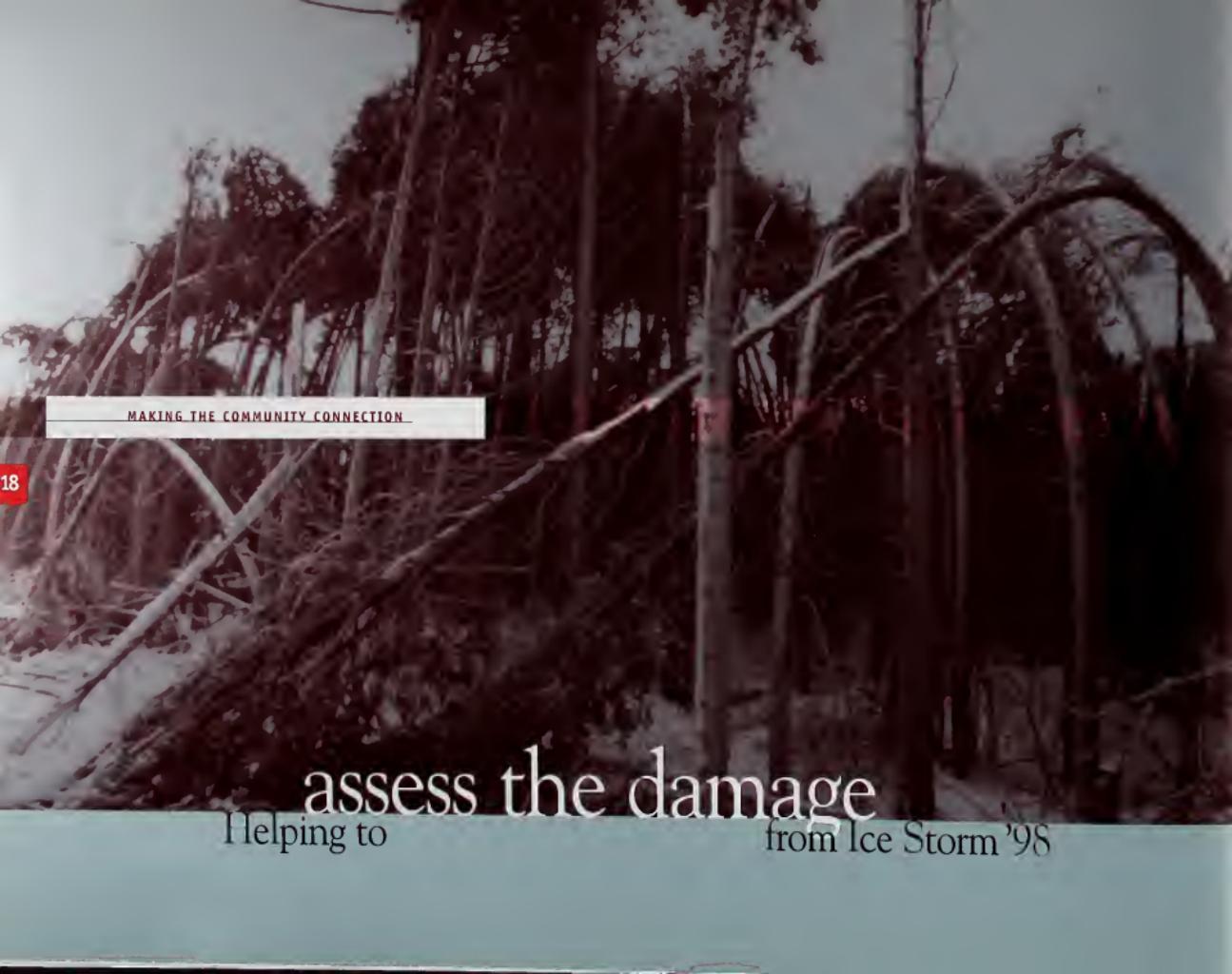
professors, staff, and students could take pride in knowing their participation was instrumental in getting the world's first heavy-water neutrino detector operational.

SNO's Associate Director, Dr David Sinclair, is from Carleton's Centre for Research in Particle Physics (CRPP), and with colleagues Drs. Tony Noble and Cliff Hargrove heads up the water purification systems team – a crucial element of the project.

#### **AN INNOVATIVE PARTNERSHIP ON SCIENCE AND RESOURCES**

A groundbreaking agreement between Carleton University and the National Research Council of Canada (NRC) was signed this spring that expands the scientific information available to Carleton researchers. Carleton will help support the collections of the NRC's Canada Institute for Scientific and Technical Information (CISTI), the largest provider of scientific and technical information in North America, in return for access to CISTI's resources.

"This agreement is a prime example of a creative solution to a pressing problem and points to a new direction in sharing scholarly information," says Martin Foss, University Librarian. "CISTI benefits from Carleton's support, the University maximizes the impact of our dollars, and our faculty and students gain access to a valuable academic resource. We all win."



MAKING THE COMMUNITY CONNECTION

18

assess the damage  
Helping to from Ice Storm '98

## LAST JANUARY'S ICE STORM BROKE ALL THE RULES, AND HAS LEFT SCIENTISTS

of such devastation. Carleton biology professor Lenore Fahrig is helping to find the answers.

"Just by coincidence, one of my graduate students had completed a very detailed analysis of 290 plot samples of the woodlots and forests around Ottawa the summer before the ice storm," says Fahrig. "That gives us a unique 'baseline' data set from which to assess the immediate effects of the storm, which we are doing this summer, and to follow the recovery of the area over the next few years."

Several forestry-related organizations, as well as the University, have contributed to the project so far, which shows signs of expanding.

Fahrig is a general ecologist, who specializes in spatial population dynamics. She receives funding from NSERC for her research on the effects of habitat loss on animal populations, but is used to pursuing varied projects when they come along. She is one of the founders of the on-line journal *Conservation Ecology*, which was created at Carleton using unique software that Fahrig and her colleagues developed.

Two other Carleton professors are also looking at the aftereffects of the ice storm. Dr. Doug King of the Department of Geography has received a grant of \$100,000 from the National Geographic Society for modeling of forest damage using airborne remote sensing. Part of the funds will be used to assess forest change in the Ottawa area resulting from the

and foresters wondering about the long-term effects

ice storm. Psychology professor Hymie Anisman is studying the effects of the storm, not on trees, but on people. A neuropsychologist interested in stress and its effects on people, Anisman is running a study of post-traumatic stress and the ice storm.

### CONTRIBUTING TO THE RECOVERY

Carleton, the University of Ottawa, the National Research Council and the local high tech community joined forces in 1997 to offer an innovative program to meet the employment needs of the high tech sector. O-Vitesse allows science and engineering graduates to reskill as software engineers through a 16-month "fast track" program that combines university courses, work terms, and individual mentoring. Phase II of the program was launched last January, and greatly expanded with 42 students and the participation of seven local companies. Discussions are underway to take the program national.

### MAKING OUR MARK ON LOCAL GOVERNMENT

Carleton is well represented at City Hall these days. Carleton alumnus Jim Watson was elected Mayor of Ottawa in a landslide victory in November, 1997. A strong Carleton supporter, Watson has joined several other prominent alumni on the steering committee for the School of Journalism and Communication's new fund raising drive. And the Mayor's Chief of Staff, Reena Bhatt, is a graduate of Carleton's School of Business.



**Biology professor**  
Dr. Lenore Fahrig  
is heading up a  
research project  
to assess the  
damage from last  
year's ice storm



### MAKING THE COMMUNITY CONNECTION



Dr. Wayne Parker,  
winner of a Petro-  
Canada Young  
Innovator Award.

### MOVING ON TO THE NATIONAL STAGE AND BEYOND

- Former Prime Minister Joe Clark has joined Carleton University as an adjunct research professor in the School of Canadian Studies. Mr. Clark's life and times are the focus of a collaborative research project between Carleton and the University of Alberta.
- Canadian Comptroller General and Treasury Board Secretary Peter Harder has joined Carleton as the new Royal Bank Visiting Chair in Women and Work. The research position is part of Carleton's Centre for Research and Education on Women and Work, set up in 1996 with a \$350,000 donation from the Royal Bank.
- Chemistry adjunct professor Keith Ingold was awarded the 1998 Canada Gold Medal for Science and Engineering by the Natural Sciences and Engineering Research Council for his pioneering work on Vitamin E and free radicals.
- Civil and environmental engineering professor Wayne Parker has received a Young Innovator Award worth \$10,000 from Petro-Canada for his work into the impact of petrochemical contaminants on the environment. Parker is exploring assessment and clean-up techniques for spills from underground petrochemical storage tanks, over 10 percent of which are estimated to be leaking.
- Civil engineering professor A.O. Abd El Halim has developed and patented technology used in a revolutionary new compactor that helps eliminate cracks when laying pavement. An Australian firm has successfully tested a prototype and commercialization is expected to follow.
- History professor Larry Black was one of only three Canadians to be awarded a NATO research fellowship for 1997-1999. His research focuses on understanding Russian objections to NATO's eastward expansion.
- Last October, Carleton's School of Business took part in a worldwide teleconference on management and leadership. Offered in conjunction with *Fortune Magazine*, the conference was broadcast to more than 30 countries. Carleton hosted one of several Canadian satellite feeds for the event.
- Geography professor Fraser Taylor is producing an electronic atlas of Latin America. His project was one of three winning entries in a competition sponsored by the Pan American Institute of Geography and History. Some \$1.3 million is committed to the two-year project, about \$125,000 of which is controlled by Carleton.



Carleton's graduates are equipped with the knowledge and skills to succeed in the workforce of today and into the next millennium.

- Carleton's first Summer Institute of Forensic Sciences got underway this year. A joint initiative between Carleton and the RCMP's Central Forensic Laboratory, the Institute provides training to law enforcement officials from around the world on topics such as DNA testing, crime scene analysis, and forensic examinations.
- Five officials with Viet Nam's foreign affairs ministry were among last June's graduating class. Carleton's Norman Paterson School of International Affairs designed a special program for the students, in consultation with the Vietnamese government, which included English as a second language, economics, political science, and Canadian academic culture.
- Carleton International is the office at the University that develops and supports international academic exchange agreements for faculty and staff. Carleton currently has academic partnerships with institutions and governments in 33 countries from Europe to the Middle East, Southeast Asia, Latin America, and the Caribbean. Providing a global perspective and unique learning experiences, Carleton International is our gateway to the world.
- Our worldwide network of 75,000-plus graduates are our most important ambassadors. Carleton's reputation for excellence depends on its graduates who, in addition to their exemplary financial commitment, continue to support their *alma mater* by volunteering their time and talents to a variety of university initiatives such as:
  - the 41-member National Alumni Council;
  - the 12 geographic branches of the Alumni Association;
  - the 16 alumni chapters based in Ottawa;
  - the 13 national Presidential Advisory Councils;
  - alumni representatives on the Board of Governors;
  - participation in the Senate and other key Carleton committees;
  - involvement in student recruitment, mentoring programs, speaker series, and social and networking activities.



Nortel (Northern Telecom) and a Swedish company, TeleLogic AB, invested \$2.4 million to create the Nortel Advanced Communications Software Engineering Research and Training Laboratory.

#### AN UPDATE ON THE CAPITAL CAMPAIGN

Through the Department of Development and Alumni Services, Carleton University works in close partnership with alumni, students, faculty and staff, corporate donors, government and friends to secure funding for projects that support the University's priorities. The continued success of the University's Capital Campaign – Carleton's biggest and most ambitious fundraising campaign to date – demonstrates that these Canadians truly believe in the value of investing in the institution. Together, supporters have donated and/or pledged a total of \$35 million to the five-year Capital Campaign – that's 70 percent of the \$50 million goal. Their generosity and commitment are fundamental to the future of the University.

#### CAPITAL CAMPAIGN ACHIEVEMENTS

- More than \$20 million in gifts and pledges will help enhance the University's endowment fund for student aid.
- \$5 million, the largest gift ever to the University, was donated by alumnus Eric Sprott, President of Sprott Securities Ltd. in Toronto.
- Major bequests totalling \$3.4 million have been received by individuals wishing to establish a meaningful legacy to Carleton.
- \$3 million in state-of-the-art earth sciences software was donated by Calgary-based International Datasphere Corporation.
- Carleton students voted "yes" in a referendum last fall to support an annual levy that is expected to raise \$400,000 per year to enhance student services at the University.
- Donations totalling \$1.4 million in transferred shares of publicly-traded stocks have been given to the University this year.
- The innovative communications infrastructure known as the CHAT system for students and faculty was installed at the University with support from leading Canadian companies.
- Leadership funding was provided for the Visiting Chair in Women and Work in the School of Business.
- The Nicol Entrepreneurial Fund was established to provide incentives and support to young students and alumni.
- \$1 million in private funding was secured for the College of the Humanities.
- The \$75,000 Petro-Canada Young Innovator Award for outstanding young faculty researchers was established.
- The Pauline Jewett Opportunity Awards were established.

- The Centre for the Study of Training, Investment and Economic Restructuring (CSTIER) was launched with leadership funding from CIBC.
- The Manulife bursary in international business was created to assist third-year students in completing their studies abroad.
- The KPMG Case Study Room was opened in the School of Business.
- Video technology equipment was donated to the School of Journalism and Communication.
- A technology fund was established to upgrade computer facilities across campus.
- The Cognos Visiting Scholar Program was launched in the School of Computer Science.
- The Millennium Gold Bursary Fund was established for students in earth sciences.
- The Métis Nation Bursary Award was established.

## CAPITAL ENVIRONMENT

As Carleton's Capital Campaign moves into the final phase of its \$50 million objective, efforts are being made to seek support for the following priority projects:

### Faculty of Science

Improving teaching facilities and establishing state-of-the-art research laboratories: \$3 million

### Faculty of Engineering and Design

Enhancing our capacity in all programs with emphasis on those related to the high technology industry: \$5 million

### Faculty of Arts and Social Sciences

Establishing a permanent endowment for the College of the Humanities: \$2 million

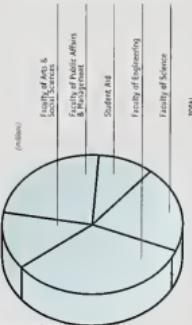
### Faculty of Public Affairs and Management

Launching the new College of Public Affairs: \$1.7 million  
 Creating the Simon Reisman Chair in Trade Policy: \$0.6 million  
 Establishing a Chair in Business and Financial Journalism and building an endowment fund for the School of Journalism and Communication: \$1.2 million

### Student Aid

Building a scholarship endowment fund to compete for and attract academically-strong students: \$1.5 million

Total: \$15 million



## FINANCIAL CHALLENGES

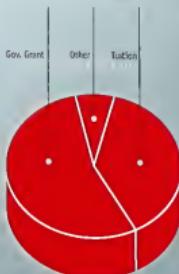
Carleton University has been dealing with the effects of a reduced income, caused in large part by a 25 percent reduction in funding from the provincial government since 1992. The University's approach to meeting this financial challenge has been to reduce expenditures, increase income, reposition and strengthen academic programs, and increase administrative efficiency.

In 1995, the University introduced a voluntary separation program as a measure to help reduce expenditures. Since that time, over 250 faculty and administrative positions have been eliminated through this program. However, the cost of offering attractive severance packages has added \$25.3 million to the University's cumulative deficit.

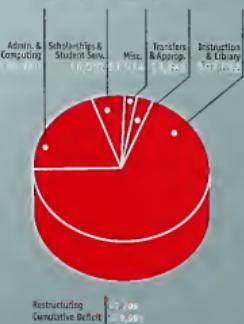
## FINANCIAL REPORT

In December, 1996, the Carleton University Board of Governors established a budget framework for long-term financial planning and set the following financial objectives: that the University reach an annual operating break-even budget in the 1998-99 fiscal year; and that the cumulative deficit be eliminated over a ten-year period.

**Operating Income 1997/98 (000's)**  
Total Operating Income \$138,475



**Operating Expenditures 1997/98 (000's)**  
Total Operating Expenditures \$139,295



The financial challenge for the 1997-98 fiscal year was to further reduce expenditures to meet the first objective. To achieve a balanced budget for 1998-99 meant eliminating \$5.4 million in operating expenditures before May 1, 1998. Through measures such as the voluntary separations of faculty and staff, administrative consolidations and reductions, and program closures, the required savings were achieved.

## INVESTING IN THE FUTURE

Carleton University will spend over \$4 million in 1998-99 to enhance services and programs for students through increasing student aid, hiring new faculty, introducing small seminars for first-year students, upgrading equipment, and improving computer access and student service facilities.

The funds for these improvements have been generated through increases in tuition fees. When the University announced average tuition increases of 8.8 percent for undergraduate programs and 5.8 percent for graduate programs for the 1998-99 academic year, it made a commitment to students that these additional revenues would be used to improve the quality of academic programs and provide better services and facilities. Students made their views known regarding the kinds of educational improvements they would see as beneficial through a consultation process set up by the students' associations.

*The following allocations for educational improvements are being made in 1998-99:*

Student Aid	\$ 1,200,000
Faculty Renewal	\$ 1,500,000
First-year Seminars for B.A. students	\$ 300,000
Journalism Equipment	\$ 500,000
Electronic Classrooms	\$ 100,000
Computer Labs and Computing Infrastructure	\$ 300,000
Capital Projects	\$ 200,000





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*Education  
for  
Life*

